

# Booster C- type Dipole Magnet

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## Magnet parameters :

Magnetic field	0.5 T
Magnet length	0.6 m
Integrated field	0.325 T*m
Current	170 A
Number of turns	128
Resistance	0.06 Ohm
Voltage	10.2 V
Copper tube	0.4096" x 0.4096" hole dia. 0.229"
Number of water circuits	2
Water pressure drop	2 atm
Power	1.73 kW
Water flow	0.018 l/s
Water temperature rise	11 C

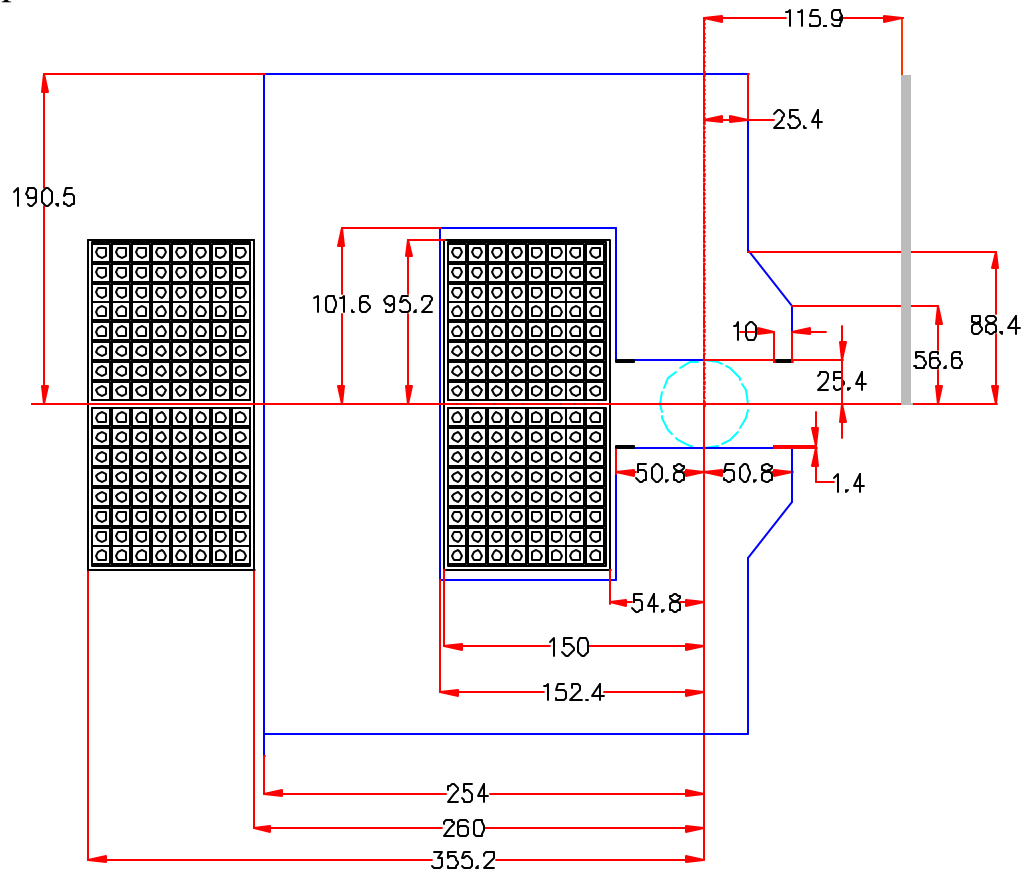


Fig. 1 Magnet cross-section. Dimensions in mm

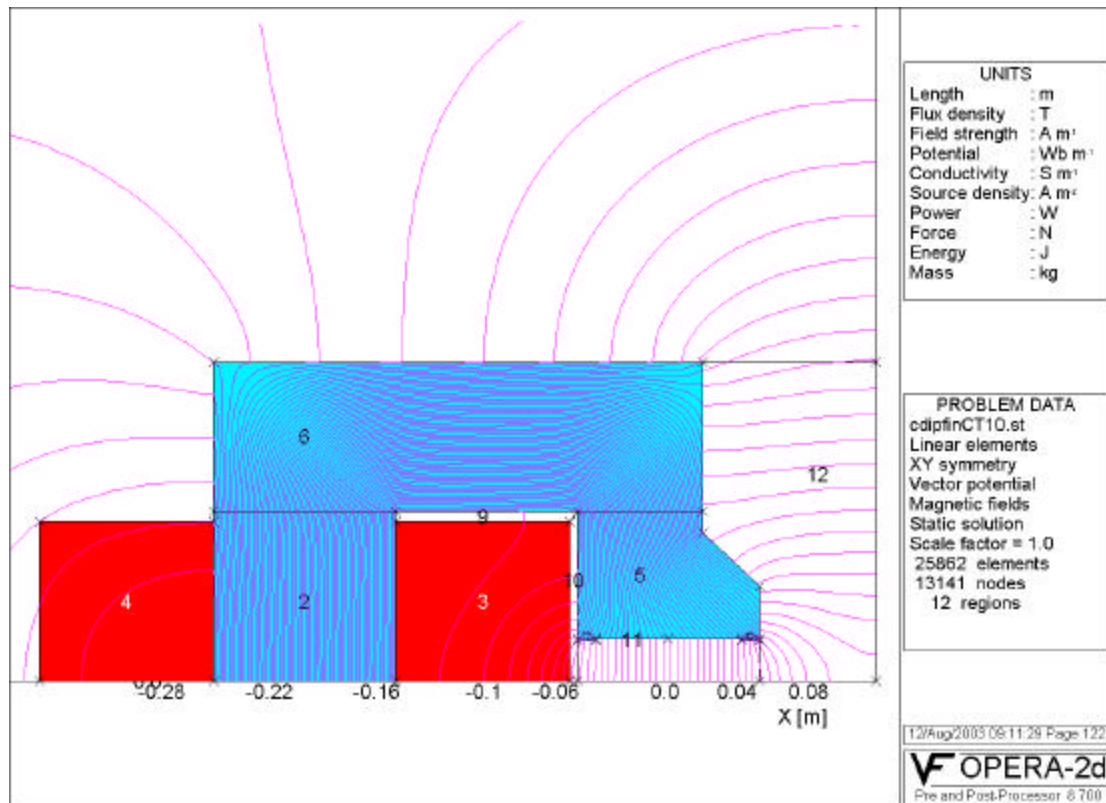


Fig.2 Flux lines

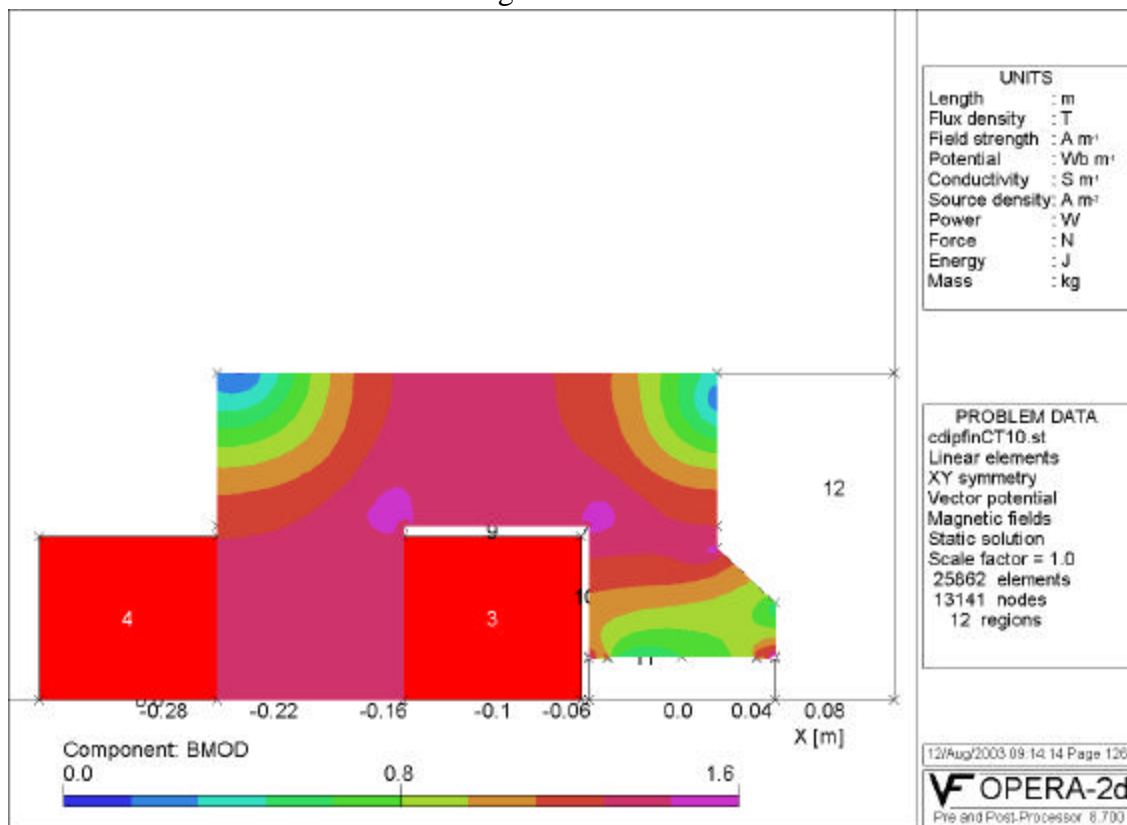


Fig.3 Flux density distribution in an iron core

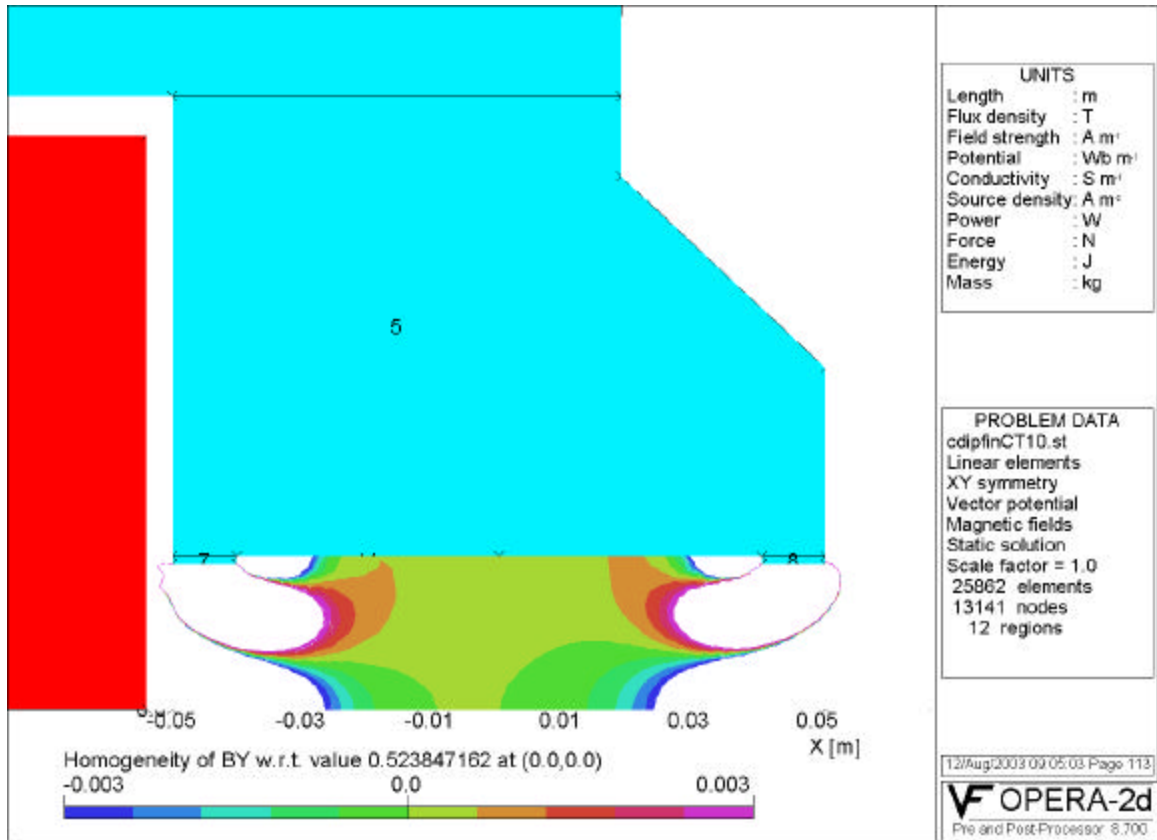


Fig.4 Field homogeneity in magnet air gap

## Summary

The dipole magnet will be positioned rather close to the main booster dipole magnet and, besides large fringing field, there will be magnetic forces  $\sim 400$  kg. So, strong supports/spacers should be placed between this magnet - booster dipole vacuum shell and structure of inner booster dipole supports should be carefully checked.

The integrated fringing field to the main dipole is rather small  $\sim 0.026$  Wb .

Distance between beam center and main booster dipole was chosen equal 4.56'' (116mm).